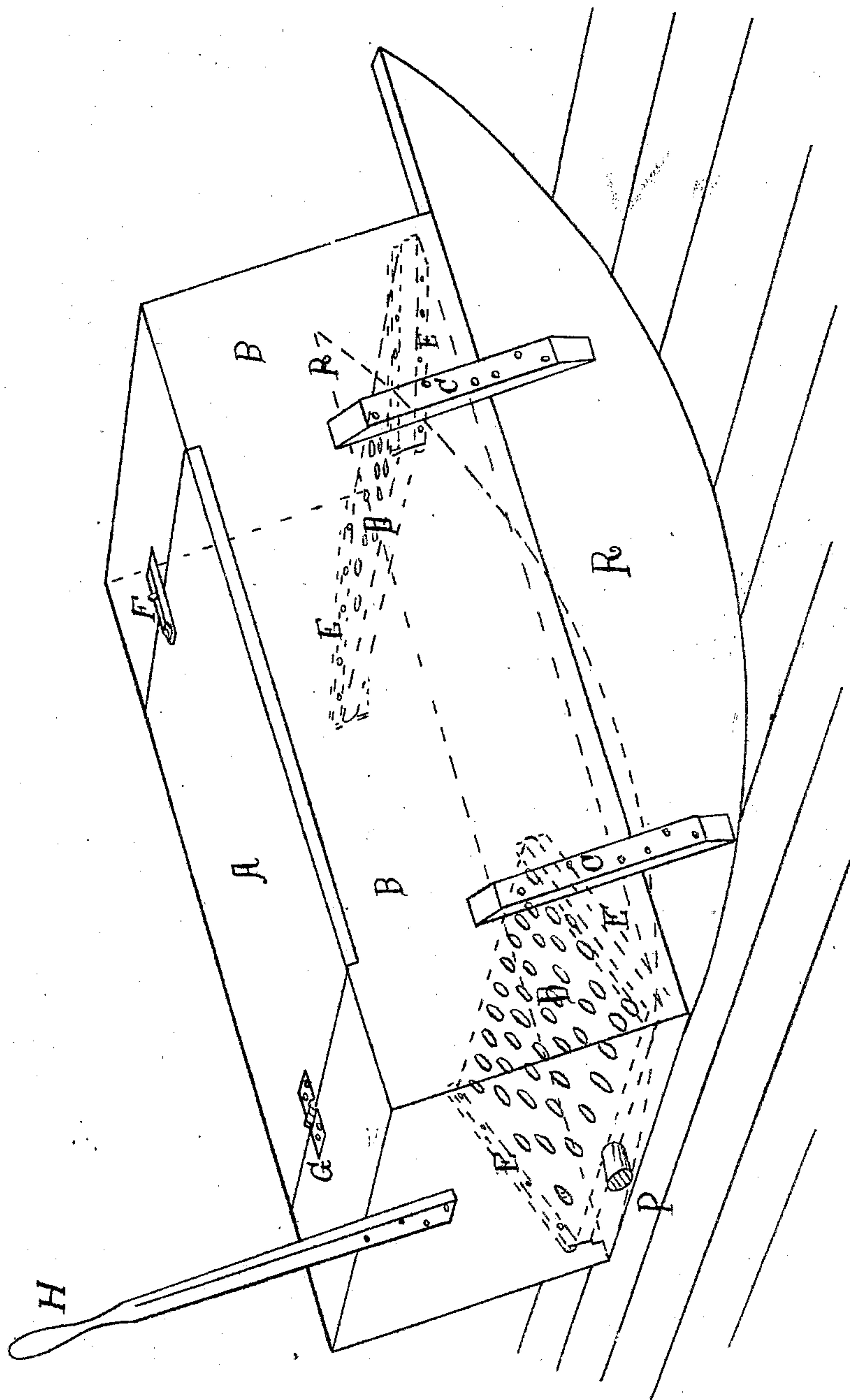


H. W. Adams.

Churn.

N^o 72959

Patented Jan. 7, 1868.



Witnesses
Am. Miller
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United States Patent Office.

HENRY W. ADAMS, OF MILTON, PENNSYLVANIA.

Letters Patent No. 72,959, dated January 7, 1868.

IMPROVEMENT IN CHURNS.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that I, HENRY W. ADAMS, of Milton, Northumberland county, and State of Pennsylvania, have invented a new and useful Improvement in Churns; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Letter B represents the box for holding the cream; letter A, the cover of said box; letters R R, the rockers attached to it; letters C C, the cleats uniting the box to the rockers; letters D D, the dashers; letters E E, the grooves in which the dashers are secured in their places in the two opposite ends of the box; letter H, the handle for rocking the churn; letter G, the hinge of the cover; letter F, the button to fasten the cover down to the box; letter P, the plug which stops the orifice for drawing off the buttermilk.

The following is a clear, full, and exact description of the construction of the said churn: The materials employed in its manufacture are sound boards, one inch thick, planed and jointed, and fastened firmly together with nails, or screws, which are preferable. For a practical family churn, suitable for churning from five to twenty pounds of butter at one time, the following dimensions are proper: Four feet long, one foot wide, and one foot deep. The cover is two feet long, placed on the top of the box, and equally distant from its two opposite ends. It is secured by a hinge to the top of the box, and swings over against the handle H. Two boards, each one foot square, are firmly and permanently fastened to the top of the box, one in front of the cover, and the other in its rear. The handle H is about four feet long, and about one inch and a half in diameter. It may be screwed on permanently to the end of the box, so as to allow three feet and a half of its length to extend above it; or it may be fitted into a mortise or round hole in a piece of wood or metal, secured to the end of the churn, and slipped in or out, as convenience may require. The rockers are a part of a circle, and are four feet and a half long, and eight inches across their widest and middle part, and half an inch deep at the two ends. They are attached to the box, so that their ends are flush with that end of it to which the handle is attached, and project eight inches, or thereabouts, beyond the other end. They are firmly secured to the box by two cleats of wood, C C, which are about eight inches long, and three inches wide, and half an inch thick. They are fastened by inch and a quarter screws. One half of their length is attached to the rockers, and the other half to the box, and about one foot from each end. The sides of the rockers, when thus united, are flush with the sides of the box. The hole which is filled by the plug P is one inch and a half in diameter, inserted in the end of the box, and as near its bottom as possible, so as to draw off all the buttermilk, and also the water with which the churn is scalded and washed. The two opposite and under sides of the cover are fitted with two strips of board, about one inch and a half wide, which shut down with the cover, and make a close joint with it and the sides of the box, to prevent the escape of cream during the time of churning. For the same purpose, both ends of the cover, when closed, rest upon a bed made of a narrow strip of board, fastened to the under side of the top of the churn, and projecting out about one inch. The two dashers are made of hard and well-seasoned wood. They are one foot wide and fourteen inches long, and one inch thick. They are perforated with holes one inch in diameter, or thereabouts, and as near together as possible without endangering the splitting or weakening of the wood. As it is of prime importance that these dashers should be made in the manner best adapted to secure their intended effect, I will describe more minutely their construction. There should be bored through each of them seventy-seven holes one inch in diameter. They should be a trifle less than one-third of an inch apart, and arranged thus: the first row should be bored one inch from the end of the dasher, so as to leave that much length of solid wood to prevent splitting, and should consist of nine holes just three-tenths of an inch apart. As twelve inches is the width of the dasher, nine-inch holes, and ten divisions of wood between them, of three-tenths of an inch each, exactly occupy it. The second row of holes consists of eight, the third of nine, the fourth of eight, the fifth of nine, the sixth of eight, the seventh of nine, the eighth of eight, and the ninth of nine. The centres of each row are precisely one inch and three-eighths of an inch apart; or rather, they cut parallel straight lines, drawn this distance apart, across the dashers. But the centres of the holes of the second row are directly opposite the divisions between the holes of the first row. Such is the case with respect to every alternate row, comprised of eight holes. The dashers being fourteen inches long, will contain nine rows of holes, five of nine holes, and four of eight, numbering seventy-seven in all, and one hundred and fifty-four in both. The two end rows will contain nine holes each, and their centres will be just

one inch and a half from the end. To get the centres of all the holes exactly, the surface of the dashers should be laid out with a rule before the holes are bored. Their dimensions being fourteen inches long and twelve inches wide, parallel straight lines should be drawn across the side which measures twelve inches wide, just one inch and three-eighths apart, beginning one inch and a half from the end. This will bring the last of the nine lines an inch and a half from the other end. Then draw parallel straight lines across the side which measures fourteen inches, just one inch and three-tenths apart, beginning eight-tenths of an inch from the edge. Where these two sets of lines cross each other at right angles will be the centres of the holes which comprise the rows containing nine. Then draw other parallel straight lines half way between those last drawn, and where they cross those first drawn at right angles, will be the centres of the holes comprising the rows containing eight. The wood of which these dashers is composed should be hard and tough, and of the best quality. They are secured in each end of the churn in grooves, composed of strips of wood firmly screwed to the sides of the churn. Their position is all-important, in order to accomplish the object for which they are intended. I say this because I have placed them in every conceivable manner, and tested their comparative efficiency. To realize their maximum value, and accomplish the purposes for which they are designed, and which will be more fully explained in a subsequent part of this specification, they must be placed in the said grooves in such a manner that their rear ends shall rest on the bottom of the churn, and against its extreme ends, and their front ends be elevated five inches, or thereabouts, above the bottom. In this position they make an acute angle with the bottom of the box. If the front ends were raised any higher, their full effect would be prevented. The cream, during the operation of churning, would pass under the dashers, and only through the holes in their lower parts; whereas it is necessary, in order that all the holes in my dashers may be filled with cream shooting through them when the churn is in motion, that the front ends of the dashers should be no higher than the depth of the cream which passes under them through the raceway, so that it may rise up to and drive into and through all the holes in them. This is the sole guide in determining the angle they should make with the bottom of the churn. But in a churn having the dimensions of the one I am now describing, five inches distance between the front ends of the dashers and the bottom of the churn is a great plenty. They are made to slide into and out of their grooves with ease, at the convenience of the operator.

Having thus given a full, clear, and exact description of the construction of my churn, so that any ordinary worker of wood can build it, I will now explain its practical operation, and show what I consider to be its novelty, utility, and public importance.

Before the operation of churning is commenced, the cream should be properly prepared. This is of prime importance when time and the quality of the butter are considered. It should be brought to a temperature of 55°. During its agitation it will rise to 60° or 65°. If warmer, the butter is liable to be too soft and oily, and if colder, it will be longer in coming. It should also be sufficiently thin to flow readily from one end of the churn to the other when it is rocked. This is best effected by putting strippings into the cream every day, or skimming off the top of the milk with the cream, or pouring into the cream in the churn a pan or two full of milk with the cream on it. When thus prepared, the cream is put into the churn, the cover buttoned down, and the rocking motion commenced by means of hand-power applied to the handle H. The result will be that the cream will flow alternately from one end of the churn to the other, and into the wedge-shaped compartments at each end, of which the two dashers constitute the tops, and the bottom and sides of the churn the other three sides, with a momentum equal to the quantity multiplied by the velocity, and will be forced into them with so much impetus and pressure as to shoot up in divided streams, compressed with violence, and ejected swiftly from all the seventy-seven holes in the dashers; and in its ascent, as it leaps up into the upper part of the churn, exposing the whole body of the cream, in separate currents, as well as to the breaking and rupturing friction to which it is powerfully subjected in passing through so many perforations under a pressure so sudden and violent. By this dashing power, so efficacious and often repeated, the butter-globules are ruptured so quickly and thoroughly, during an easy, rocking motion, which a child can perform, that in from five to fifteen minutes the entire amount of butter which the cream is capable of making, is granulated and gathered into a floating mass, of prime and superior quality. The two dashers are now withdrawn from their grooves, a little cold water dashed on them while still in the churn, to clean off the adhering lumps of butter, and by a few rocking motions the whole product is collected together and made ready to be removed and prepared for use in the usual manner. The plug P, in the end of the box, is now taken out, and the buttermilk run off through the orifice thus opened.

Having given a full, clear, and exact description of the two principal features of my invention, which I consider to be especially novel and useful, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The construction and arrangement of the two dashers D D, in combination with the churn B, substantially in the manner and for the purposes described.
2. The rockers R R, in combination with the churn B, when connected and operated substantially in the manner and for the purposes herein set forth.

HENRY W. ADAMS.

Witnesses:

DANIEL BURNMAN,
ISAAC STRIKER.